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PATENT ABSTRACTS OF JAPAN

(11)Publication number : 01-297069

(43)Date of publication of application : 30.11.1989

(51)Int.Cl.

A61L 15/06
// A61K 9/70

(21)Application number : 63-129387

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(22)Date of filing : 25.05.1988

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(54) TACKY ADHESIVE AGENT COMPOSITION

(57)Abstract:

PURPOSE: To obtain an ideal sticking agent for external use which is free from contact with air by forming the tacky adhesive agent compsn. consisting of an A-B-A type block copolymer, softener, water absorptive polymer, and alicyclic petroleum resin.

CONSTITUTION: The A-B-A type block copolymer refers to a block copolymer of a monovinyl substd. arom. compd. A and conjugate, diolefin copolymer B and the compounding ratio thereof is specified to 10-30 pts.wt. in the tacky adhesive agent compsn. The water absorptive polymer refers to the polymer which gelatinizes and swells by absorbing water of 10 times its own weight and is prepd. by properly mixing 1 or 2 kinds of the water absorptive polymers introduced with a light crosslinking bond with, for example, a water soluble polymer. The ratio of said polymer to be compounded is 1-10 pts.wt. in the tacky adhesive agent compsn. The alicyclic petroleum resin refers to a petroleum resin having cyclic skeleton and the ratio of said resin to be compounded is 10-50 pts.wt. Higher fatty acid, liquefied rubber, mineral oil, etc., are used for the softener and the ratio of the softener to be compounded is 10-50 pts.wt. The base is selected from stretchable or non-stretchable bases consisting of, for example, polyethylene, etc.

LEGAL STATUS

[Date of request for examination]

[Date of sending the examiner's decision of rejection]

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number]

[Date of registration]

[Number of appeal against examiner's decision of rejection]

[Date of requesting appeal against examiner's decision of rejection]

[Date of extinction of right]

1. Title of the invention

Tacky adhesive agent composition

2. Claims

1. The tacky adhesive agent composition which comprises the following;
A - B - A type block copolymer 10 part by weight to 30 part by weight, alicyclic petroleum resin 10 part by weight to 50 part by weight, softener 10 part by weight to 50 part by weight, and water absorptive polymer 1 part by weight to 10 part by weight.

3. Detailed description of the invention

[a field of industrial application]

The present invention is to provide the new tacky adhesive agent composition which canceled the shortcoming which binder for conventional medical treatment has.

[Prior art]

Conventionally, binder has been used for adhesive tape such as dressing for operations, sticking plaster, taping or the measure which endermically administered a drug such as a plaster, tapes, a patch, and epithem.

However, as for these binder, there are pulling of hair in abrasion, compression of skin by hardness of binder, abrasion by gaps of movement of skin and binder, lack of air and moisture permeability in the use.

Therefore, when this was affixed to skin, porus sudoriferus emphraxis of the skin surface is caused, diffusion of moisture has stopped, catching on occurs by stimuli constituent included in perspiration and excretion.

On the other hand, various kinds of trials do these problems as a means for solving problem.

For example, in Japanese Patent Publication No. 58-52251, a method to open a vent in ointment body is shown.

In addition, in Japanese Patent Laid-Open No. 58-4721, Japanese Patent Laid-Open No. 60-56911, Japanese Patent Laid-Open No. 60-23312, drug combination for catching on prevention or skin stimuli reduction is shown in.

A thing used for expansion and contraction nature group cloth in specific

binder is shown in Japanese Patent Laid-Open No. 60 - 75428.

Special disposal is spent to matrix in Japanese Patent Publication No. 59 - 19528, a method to make reduce skin irritation is shown.

However, and it is put in the case of which, and utility includes a problem, and a production process is complex and the effect is insufficient, too.

In addition, it is tried a method to make adsorb perspiration and the secretion which are a main cause of catching on in base, for example, Japanese Patent Publication No. 58-23846 issue and Japanese Patent Laid-Open No. 60-41968 issue disclose a method to combine acryl copolymer with combination. Japanese Patent Publication No. 54-44688 issue discloses a method to combine PVA and cellulose, and Japanese Utility Model Laid-Open No. 55-19258 issue discloses polysaccharide gum.

In addition, in Japanese Patent Laid-Open No. 60-123416 and Japanese Patent Laid-Open No. 60-123417, perspiration absorption or moisture penetrativity is given to patch by means of water-soluble polymer and combining polysaccharide, reduction of skin stimuli is tried.

However, actually, there is the top when ointment body begins to melt in perspiration because, on the contrary, it is water-soluble, even if, besides, it is put in the case of which, because it is insufficient as water absorption, perspiration absorption ability, and there is it only in water absorption capacity of around 1.0% to the utmost, perspiration or excretion is not adsorbed in complete, therefore, catching on by perspiration and the excretion which were not adsorbed is the occurring present conditions. Even if various kinds of methods are tried as above, it is far from practice, and it is the present conditions that ideal external use patch without catching on does not yet appear after all.

[Means to solve a problem]

Considering these situation, the present inventor found the followings; as a result of having repeated investigation zealously in order to cancel side reaction of medical treatment use binder of

1. Cancellation of pulling of hair in abrasion,
2. The flexible adherence which can follow movement of skin,
3. Cancellation of skin stimuli by function of physiology such as diaphoresis

by pasting for a long time, that binder composition comprising of A - B - A pattern block copolymer, softener, water absorption high polymer and alicyclic petroleum resin, holds flexible blocking characteristic without pressing the blocking characteristic which is enough the flexible which can follow skin in movement of skin are absorbed, and by absorbing a thing and perspiration from skin it is what can remarkably reduce pulling of hair in exfoliation, or side reaction of catching on.

Four elements composing the present invention are explained. Constituent of each specify is essential element of the present invention.

1) A - B - A type block copolymer is the main polymer of an adherence ingredient of the present invention, and bulk formation is owned.

In binder composition of the present invention, 2) water absorptive polymer adsorbs perspiration and secretion from skin.

3) alicyclic petroleum resin is a tackifier, and, by a combination with A - B - A type block copolymer, an adherence characteristic of optimum is provided for the first time.

4) softener dissolves and softens A - B - A type block copolymer, and the blocking which is flexible physical property following the skin and flexible without pulling of hair in exfoliation, which are characteristics of the invention appear by combination with alicyclic petroleum resin as blocking grant resin, and the softener and A - B - A type block copolymer.

Each ingredient is explained in detail next.

A - B - A type block copolymer is block copolymer with monovinyl displacement aromatic compound A and conjugation diolefin copolymer B, and specifically, such as calif lek TR -1101, calif lek TR -1107, calif lek TR -1111, calif lek TR -1112, calif lek TR -1117 (made by Shell chemistry), the 418th class solplene (made by Philip petroleum), and the combination quantity is 10-30 part by weight in binder composition, and preferably it is 15-25 part by weight.

With water absorptive polymer, water more than 10 times of own weight is absorbed and gelation swelling, and the water absorptive high polymer which, for example, introduced slight cross linking into water soluble polymer has it in appropriately solely or two kinds of blending of and over, and is prescribed.

Specifically, sun wet IM -300, sun wet IM -300 MPS, sun wet IM -1000, sun wet IM -1000 MPS (made in Sanyo Kasei) , aqua keeping 4 S, aqua keeping 4 S H (made by iron manufacture chemistry) , SUMIKAGEL S P-520, SUMIKAGEL N-100, SUMIKAGEL NP -1020, SUMIKAGEL NP -1040 (made by Sumitomo chemistry) , K I gel 201 - K, K I gel -201 K - F 2 (made in Kuraray), ARASORB 800, ARASORB 800 F (made by Arakawa chemistry), in particular, sun wet IM -300 MPS, sun wet IM -1000 M P S, SUMIKAGEL N P -1020, SUMIKAGEL N P -1040, K I gel -201 K - F 2, ARASORB 800 F are more preferred.

As a quantity of combination, it is 1-10 part by weight in binder composition, and preferably it is 2-8 part by weight.

Alicyclic petroleum resin is the oil resin having cyclic skeleton, and specifically, ARKON P -85, ARKON P -100, ARKON P -125 (made by Arakawa chemistry), ESCOREZ 3000 (made in Exxon) , Quinn ton (made by Nippon Zeon), and the combination quantity is 10-50 part by weight, and preferably are 25-45 part by weight.

As softener, higher fatty acid, liquid rubber, mineral oil are used, as a quantity of the combination, 10-50 part by weight, preferably is 25-45 part by weight.

In addition, according to purpose of use, and it is accepted, and age resistor inorganic filler, oxidation inhibitor of publicly known can combine appropriate optimum dose conventionally.

It is done as above, and, as for the binder composition of the provided present invention is used for emergency sticking plaster, the surgical dressing for postoperative wound protection, recruitment fastening tape of incision compound suture part, and the taping which is used in sports.

In addition, it makes contain percutaneous absorption pharmaceutical thing, it can be used as patch for medical treatment.

For example, as skin stimulating agent and analgesia antiphlogistine, salicylic acid, methyl salicylate, salicylic acid glycol, 1- menthol, camphor, mentha oil, thymol, nicotinic acid benzyl ester, capsicum extract, capsaicin, nonyl acid vanillylamide, felbinac, flufenamic acid butyl, piroxicam, indometacin, ketoprofen, pranoprofen, feprazone, loxoprofen, amfenac sodium, oxaprozin, emorfazone, fentiazac, diclofenac sodium, diflunisal, ibuprofen piconol, bendazac and suprofen, these ester derivative

or buprenorphine hydrochloride, pentazocine, butorphanol tartrate or the like.

As central nerve agent (a sleep sedative, antiepileptic drug, drug for psycho

neurosis), fluphenazine, thioridazine, diazepam, chlorpromazine, nitrazepam, estazolam, triazolam, nimetazepam, flunitrazepam, haloxazolam, flurazepam, clonazepam, propericiazine, prochlorperazine, alprazolam, oxazepam, oxazolam, cloxazolam, prazepam, flutazolam, mexazolam, lorazepam, fludiazepam, bromazepam, medazepam or the like.

As diuretic drug, hydrothiazide, bendroflunathiazide, ethiazide, cyclopenthiazide, hydrochlorothiazide, penflutizide, methyclothiazide, furosemide, metolazone, polythiazide, bendroflumethiazide or the like.

As antihypertensive agent, clonidine, alseroxylon, rescinnamine, dihydroergotoxine mesylate, recerpine, prazosin, captopril, pindolol, enalapril maleate or the like.

As coronary vasodilator, glyceryl trinitrate, nitroglycol, isosorbide, hydrochloric acid papaverine, dipyridamole, efloxate, trimethazidine, nicorandil, cinnarizine, nyridone, molsidomine, nifedipine, or the like.

As antitussive expectorant agent, codine phosphate, dihydrocodeine phosphate, ephedrine hydrochloride, clorprenaline hydrochloride, fenoterol hydrobromide, salbutamol sulfate, phosphoric acid, dimemorfan, azelastine hydrochloride, hydrochloric acid clenbuterol, tulobuterol hydrochloride, trimetoquinol hydrochloride, procaterol hydrochloride, hydrochloric acid bromhexin, tranilast, tipedipine hibenazade, fumaric acid ketotifen, formoterol fumarate, phosphoric acid benproperine, glycyrrhetic acid or the like.

As an antihistamine, diphenhydramine hydrochloride, triprolidine hydrochloride, hydrochloric acid isothipendyl, promethazine-HCl, chlorpheniramine maleate, hydrochloric acid cyproheptadine, clemastine fumarate, carbinoxamine maleate, dimetindene maleate or the like.

As agent for arrhythmia, alprenolol, oxprenolol, bucumolol, bupranolol, pindolol, indenolol, carteolol, bufetolol, propranolol, timolol or the like.

As cardiostimulant agent, digitalis, ubidecarenone, digoxin, methyl digoxin, deslanoside or the like.

As sex hormone, oestradiol enanthate, oestradiol cypionate, levonorgestrel, estradiol or the like.

As adrenal skin hormone, hydrocortisone acetate, hydrocortisone, prednisolone, triamcinolone acetonide, dexamethasone phosphate, methylprednisolone, acetic acid ダイクロリンアセトニド, acetic acid dexamethasone, dexamethasone, fluorometholone, betamethasone sodium phosphate, betamethasone, betamethasone valerate, beclometasone dipropionate, fludroxycortide, hydrocortisone butyrate, dipropionic acid betamethasone, fluocinonide, propionic acid clobetasol, valeric acid diflucortolone, halcinonide, amcinonide, valeric acid prednisolone or the like.

Lidocaine, ethyl aminobenzoate, procaine hydrochloride, dibucaine, procaine or the like are given as local anesthetic.

One kind of drug efficacy ingredient or, is combined more than two kinds at need, are used.

As support, it is selected from support of the expansion and contraction nature or the non-expansion and contraction nature such as film or sheet or madreporic body, foam of polyethylene, polypropylene, polybutadiene, ethylene vinyl acetate copolymer, polyvinylchloride, polyester, nylon, polyurethane and paper, cloth, nonwoven fabric.

For example, as a manufacturing process, kneading machine such as kneader or amixer or the like are used by a method of publicly known well conventionally, it is kneaded in temperature of around 120-160 degrees Celsius, it directly spreads in tape or sheet base material or put it in paper or film with exfoliation treatment for once and crimp on base material for use.

[Operation/working-effect]

Next, binder composition of the present invention essentially needs, as described in the following Test examples and Examples, a combination with

- 1) A - B - A type block copolymer 10 part by weight to 30 part by weight,
 - 2) water absorptive polymer 1 part by weight to 10 part by weight,
 - 3) alicyclic petroleum resin 10 part by weight to 50 part by weight,
 - 4) softener 10 part by weight to 50 part by weight, and this, specifying
- (1) A flexible adherence characteristic to follow skin
 - (2) Absorption action of perspiration and secretion.

A characteristic of the above appears, skin is always bonded to softly , without pulling of hair in abrasion, development of catching on by sweating was controlled more, too.

Ideal binder composition is right become.

The operation/working-effect is explained according to Examples and Test examinations more in detail next.

Example 1

25 parts of calif lek T R -1107s (made by shell chemistry) as A - B - A type block copolymer, 40 parts of ARKON (made by Arakawa chemistry) as alicyclic petroleum resin, and 30 parts of liquid paraffin as softener are kneaded at 150 degrees Celsius in kneader. By addition mixed five parts of sun wet IM -300 MPS (made in Sanyo Kasei) as water absorptive high polymer, binder composition of the present invention was got.

Example 2

22 parts of calif lek T R -1107s (made by shell chemistry) as A - B - A type block copolymer, 42 parts of ARKON (made by Arakawa chemistry) as alicyclic petroleum resin, and 33 parts of liquid paraffin as softener are kneaded at 160 degrees Celsius in kneader. By addition mixed three parts of ARASORB 800 F (made by Arakawa chemistry) as water absorptive high polymer, binder composition of the present invention was got.

Example 3

20 parts of calif lek T R -1111s (made by shell chemistry) as A - B - A type block copolymer, 31 parts of ARKON (made by Arakawa chemistry) as alicyclic petroleum resin, and 40 parts of liquid paraffin as softener are kneaded at 160 degrees Celsius in kneader. By addition mixed six parts of sun wet IM -300 MPS (made in Sanyo Kasei) as water absorptive high polymer and three parts of titania, binder composition of the present invention was got.

Reference example 1

The binder composition got in Example 1 was spread on the polyester nonwoven fabric which grew by 120% in both axes direction respectively, to be it in film thickness 200 μ m, and medical treatment use taping tape was got.

Reference example 2

The binder composition got in example 2 was spread on release agent paper

which can leave siliconizing by thickness of 60 μm , and crimp it on urethane film of thickness 40 μm , it was done with medical treatment use surgical dressing.

Reference example 3

The binder composition got in Example 3 was spread on release agent paper which siliconizing was able to leave by thickness of 100 μm , and crimp it on effervescence polybutadiene sheet, it was done with medical treatment use surgical tape.

Reference example 4

4.8 parts of 1- menthol, 2.4 parts of methyl salicylate , and 1.5 parts of mentha oil are added in 100 parts of binder composition got in Example 1, it was spread on release agent paper which can leave siliconizing in thickness 150 μm , and crimp it on polyvinylchloride sheet, and it was done with medical treatment use patch.

Reference example 5

5.4 parts of 1- menthol and 5.0 parts of salicylic acid glycol are added in 100 parts of binder composition got in Example 1, it was spread on nonwoven fabric in thickness 200 μm , and it was done with medical treatment use patch.

Reference example 6

3.5 parts of indometacin is added in 100 parts of binder composition got in Example 1, it was spread on polyvinyl chloride sheet in thickness 100 μm , and it was done with medical treatment use patch.

Reference example 7

Two parts of ketoprofen is added in 100 parts of binder composition got in Example 2, it was spread on polyester film that siliconizing was done in thickness 100 μm , and crimp it on polyethylene film, it was done with medical treatment use patch.

Reference example 8

2.5 parts of ketoprofen dissolved in five parts of salicylic acid glycol is added in 100 parts of binder composition got in Example 3, it was spread on polyester film in thickness 100 μm , and it was done with medical treatment use patch.

Comparative example 1

25 parts of calif lek TR -1107s (made by shell chemistry) as A - B - A type block copolymer, 40 parts of ARKON (made by Arakawa chemistry) as alicyclic petroleum resin, and 30 parts of liquid paraffin as softener are kneaded at 150 degrees Celsius in kneader. 4.5 parts of 1- menthol four, 2.3 parts of methyl salicylate, and 1.4 parts of mentha oil were added and processed same as Reference example 4.

Comparative example 2

25 parts of calif lek T R -1107s (made by shell chemistry) as A - B - A type block copolymer, 40 parts of rosin system resin, and 30 parts of liquid paraffin as softener are kneaded at 140 degrees Celsius in kneader. 4.5 parts of 1- menthol, 2.3 parts of methyl salicylate, and 1.4 parts of mentha oil were added and processed same as Reference example 4.

Test example 1 (patch test)

Reference example 4 provided by Example 1 of the present invention and Reference

example 5, Comparative example 1 and 2 were used of size of each 4*6cm, and were affixed to height part of 35 normal adult male for 24 hours.

The result is shown in table 1.

Table 1

Examination

- 1) Skin irritation
- 2) Pain in abrasion

Reference example 4

4.1

○

Reference example 5

3.8

○

Comparative example 1

18.5

△

Comparative example 2

20.5

×

1) Skin irritation

It was exfoliated after preparation for 24 hours, and a state of skin after one and 24 hours was observed, and a mark became it in skin irritation.

(Criterion for evaluation is as follows.)

There is no judgment mark change

— 0

A feeble change

± 0.5

A clear change

+ 1.8

The flare which is serious

++ 2.0

2) A pain in abrasion

It was exfoliated after preparation for 24 hours, a pain in abrasion and pulling condition of hair were evaluated.

(Criterion for evaluation is as follows.)

Not painful

○

Slight pain

△

Skin / hair is pulled, and is painful

×

As it is understood from table 1, as for Reference example 4 and Reference example 5 provided in the present invention a pain in exfoliation and skin stimuli is low in extremely in comparison with Comparative example 1 that does not add water absorptive polymer, or Comparative example 2 that uses resin of other.

Test example 2 (a water absorbing power examination)

Example 1 and 2 of the present invention, and Comparative example 3, which except water absorptive polymer from Example 1 as a comparative example were used as a block of each 10cm³ for the test.

Each block is soused in water and taken out eight hours later, the weight was divided by the weight which increased, the quantity which did water absorption is shown in table 2.

Table 2

Increase by weight %

Example 1

52.6

Example 2

49.0

Comparative example 3

3.4

It seemed to be clear from the result that the adherence composition of the present invention showed outstanding water absorbing power in comparison with Comparative example.

[Effect of the invention]

Like the above-mentioned Examples, Test examples, binder composition of the present invention can employ without worry of catching on as sticking plaster, surgical dressing, surgical tape, medical treatment use patch and can show the function enough and is useful for extremely in industry by specific combination of

- 1) A - B - A type block copolymer
- 2) water absorptive polymer
- 3) alicyclic petroleum resin
- 4) softener

having characteristics of

- (1) A flexible adherence characteristic to follow,
- (2) Absorption action of perspiration and secretion